

WHAT IS CLAIMED IS:

1. A signal detection method, comprising:
 - determining power of a frequency component of a signal;
 - accumulating the power for a long-term;
 - 5 accumulating the power for a short-term;
 - finding a delta integrated power spectrum that is a difference between the accumulated power for the long-term and the accumulated power for the short-term;
 - finding a high delta integrated power spectrum and a normalized delta
 - 10 integrated power spectrum; and
 - determining whether the high delta integrated power spectrum represents a signal of interest by comparing the power of the high delta integrated power spectrum to the power of the normalized delta integrated power spectrum.
- 15 2. The method of claim 1, wherein accumulating power includes integrating the power.
3. The method of claim 1, wherein accumulating power is performed by an infinite impulse response filter.
4. The method of claim 1, wherein a long-term is approximately 400
- 20 milliseconds.
5. The method of claim 1, wherein a short-term is approximately 200 milliseconds.
6. The method of claim 1, wherein the high delta integrated power spectrum is the delta integrated power spectrum having the highest power of
- 25 a series of delta integrated power spectrums.

7. The method of claim 1, wherein the high delta integrated power spectrum is one of a plurality of delta integrated power spectrums having the highest power of a series of delta integrated power spectrums.

5 8. The method of claim 1, wherein the normalized delta integrated power spectrum is an average power experienced in a plurality of delta integrated power spectrums.

9. The method of claim 1, wherein determining whether the high delta integrated power spectrum represents a signal of interest includes:
finding a power difference by subtracting the power of the normalized
10 delta integrated power spectrum from the power of the high delta integrated power spectrum; and
determining that the high delta integrated power spectrum represents a signal of interest if the power difference exceeds a predetermined significance threshold.

15 10. The method of claim 9, wherein determining whether the high delta integrated power spectrum represents a signal of interest further includes determining that the high delta integrated power spectrum represents a signal of interest if the power exceeds the significance threshold for at least a predetermined duration.

20 11. The method of claim 1, further comprising comparing the high delta integrated power spectrum to a plurality of standards to determine to which standard the high delta integrated power spectrum most closely corresponds.

12. The method of claim 11, wherein multiple high delta integrated power spectrums are utilized in conjunction with a sampling rate at which those high
25 delta integrated power spectrums were taken are used in the comparison.

13. A signal detection device, comprising:
a processor to determine imaginary and real portions of a signal and

determine a frequency component of the signal;

a first filter to accumulate power of the frequency component for a long-term;

5 a second filter to accumulate power of the frequency component for a short-term;

a first differentiator to calculate a delta integrated power spectrum that is a difference between the accumulated power for the long-term and the accumulated power for the short-term;

10 a filter to determine a normalized power for a plurality of delta integrated power spectrums;

a memory to store a power value for a highest delta integrated power spectrum; and

15 a second differentiator to determining whether the power value for the high delta integrated power spectrum exceeds the normalized power for the plurality of delta integrated power spectrums by at least a predetermined threshold.

14. The device of claim 13, wherein the imaginary and real portions of the signal are determined by utilizing a discrete Fourier transform.

20 15. The device of claim 14, wherein determining the frequency component includes performing the Pythagorean Theorem on the imaginary and real portions of the signal.

16. The device of claim 13, wherein the first filter and the second filter are infinite impulse response filters.

25 17. The device of claim 13, wherein the memory includes a queue that includes a plurality of the highest delta integrated power spectrums.

18. The device of claim 13, wherein the plurality of delta integrated power spectrums normalized are a series of delta integrated power spectrums.

19. An article of manufacture, comprising:
a computer readable medium having stored thereon instructions which,
when executed by a processor, cause the processor to:

5 determine power of a frequency component of a signal;
 accumulate the power for a long-term;
 accumulate the power for a short-term;
 find a delta integrated power spectrum that is a difference
between the accumulated power for the long-term and the accumulated power
for the short-term;
10 select a high delta integrated power spectrum;
 calculate a normalized delta integrated power spectrum; and
 determine whether the high delta integrated power spectrum
represents a signal of interest by comparing the power of the high delta
integrated power spectrum to the power of the normalized delta integrated
15 power spectrum.

20. The method of claim 19, wherein the high delta integrated power
spectrum is one of a plurality of delta integrated power spectrums having the
highest power of a series of delta integrated power spectrums.

21. The method of claim 19, wherein the computer readable medium
20 further causes the processor to determine whether the high delta integrated
power spectrum represents a signal of interest by:

 finding a power difference by subtracting the power of the normalized
delta integrated power spectrum from the power of the high delta integrated
power spectrum; and

25 determining that the high delta integrated power spectrum represents a
signal of interest if the power difference exceeds a predetermined significance
threshold.

22. The method of claim 19, wherein the computer readable medium
further causes the processor to compare the high delta integrated power

spectrum to a plurality of standards to determine to which standard the high delta integrated power spectrum most closely corresponds.

23. A device comprising:

an analog front end clock having an input to be coupled to an analog
5 signal and an output;

a sampler having an input coupled to the analog front end clock and an
output coupled to a demodulator;

a processor coupled to the output of the sampler to determine
imaginary and real portions of a second signal present at the output of the
10 sampler and determine a frequency component of the second signal;

a first filter to accumulate power of the frequency component for a long-
term;

a second filter to accumulate power of the frequency component for a
short-term;

15 a first differentiator to calculate a delta integrated power spectrum that
is a difference between the accumulated power for the long-term and the
accumulated power for the short-term;

a filter to determine a normalized power for a plurality of delta
integrated power spectrums;

20 a memory to store a power value for a highest delta integrated power
spectrum; and

a second differentiator to determining whether the power value for the
high delta integrated power spectrum exceeds the normalized power for the
plurality of delta integrated power spectrums by at least a predetermined
25 threshold.

24. The device of claim 23, wherein the imaginary and real portions of the
signal are determined by utilizing a discrete Fourier transform.

25. The device of claim 24, wherein the frequency component is
determined by performing the Pythagorean theorem on the imaginary and real
30 portions of the signal.

26. The device of claim 23, wherein the memory includes a queue that includes a plurality of the highest delta integrated power spectrums.

27. A method, comprising:

sampling a signal:

5 determining delta integrated power spectrum values for a plurality of samples;

selecting a plurality of highest delta integrated power spectrum values; and

10 combining highest delta integrated power spectrum values that were taken from adjacent samples.

28. The method of claim 27, wherein combining the highest delta integrated power spectrum values includes adding the values of the adjacent highest delta integrated power spectrums.

29. A modem, comprising:

15 a demodulator to couple to an incoming signal;

a processor to determine imaginary and real portions of a signal and determine a frequency component of the signal;

a first filter to accumulate power of the frequency component for a long-term;

20 a second filter to accumulate power of the frequency component for a short-term;

a first differentiator to calculate a delta integrated power spectrum that is a difference between the accumulated power for the long-term and the accumulated power for the short-term;

25 a filter to determine a normalized power for a plurality of delta integrated power spectrums;

a memory to store a power value for a highest delta integrated power spectrum; and

30 a second differentiator to determining whether the power value for the high delta integrated power spectrum exceeds the normalized power for the

plurality of delta integrated power spectrums by at least a predetermined threshold.

30. The modem of claim 29, wherein the processor further compares the high delta integrated power spectrum to a plurality of standards to determine to which standard the high delta integrated power spectrum most closely corresponds.
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